

We claim:

1. A method of predicting a clinical response of a tumor or a cancer cell to at least one chemotherapeutic agent in a patient comprising
  - 5 (a) contacting a sample comprising patient tumor or cancer cells with said agent *in vitro* and
  - (b) detecting caspase-3 activity in the sample,thereby predicting a clinical response to said at least one chemotherapeutic agent.
2. The method of claim 1, wherein the predicting comprises detecting cell apoptosis.
- 10 3. The method of claim 1, wherein said tumor cells are epithelial cells.
4. The method of claim 1, wherein said tumor cells are epithelial ovarian cancer cells.
- 15 5. The method of claim 1, wherein said cell sample is cultured from about 60-70% confluency before said contacting.
6. The method of claim 1, wherein said sample is contacted with said at least one agent for a length of time from about 4 hours to about 48 hours.
- 20 7. The method of claim 1, wherein said contacting is separate for each agent.
8. The method of claim 7, wherein said agents are selected from the group consisting of carboplatin, paclitaxel, docetaxel, gemcitabine, topotecan, cisplatin and any combination thereof.
- 25 9. The method of claim 1, further comprising performing dose response measurements.
10. The method of claim 1, further comprising performing time course measurements.
- 30 11. The method of claim 1, wherein said tumor cells are primary tumor cells, ascites tumor cells or metastatic tumor cells.